

COMMONWEALTH OF AUSTRALIA
PATENT SPECIFICATION 25,735/57.

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Classification 74.5.

Drawing attached.

COMPLETE SPECIFICATION.

"IMPROVEMENTS RELATING TO FLUID TIGHT SWIVEL COUPLINGS."

The following statement is a full description of this invention, including the best method of performing it known to us:-

This invention relates to fluid tight or sealed swivel couplings of the type in which one or both pipes or tubes coupled by the coupling are free to relatively rotate or angularly move without any escape of the fluid. Such couplings are widely used in compressed air, pressure liquid and steam lines, particularly steam lines for tyre moulds and the like.

It is the principal objective of the instant invention to provide an improved coupling of the type specified having the characteristic of simplicity in construction with consequent economy in production without sacrificing the essential requirement of maintaining a positive fluid leak-proof seal between the movable component parts of the coupling.

With the above stated objective in view there is provided according to the invention a swivel coupling comprising an intermediate tubular body section, a relatively fixed pipe connecting section having a cylindrical stem threaded into one end of the body section, a relatively rotatable pipe connecting section having a coaxial plain cylindrical stem projecting into the other end of the body section to neatly fit the bore of the threaded cylindrical stem, an annular sealing means disposed about the plain cylindrical stem between the end of the threaded cylindrical stem and a seating

in the bore of the body section, and means retaining the rotatable pipe connecting section in assembly with said body and fixed sections including at least one pin projecting through the body portion or section and an aligning peripheral annular groove in the cylindrical extension or stem of the relatively rotatable pipe connecting section, to restrain axial movement without obstructing relative rotation a movement of said rotatable section.

Conveniently the construction and disposition of the above retaining means is such that the above relatively rotatable pipe connecting section can be readily removed to permit maintenance operations to be carried out such as the replacement of the sealing means or members which are preferably composed of resilient or flexible material impervious to the particular fluid or liquid.

The accompanying drawings depict a practical arrangement of a swivel pipe coupling according to this invention.

In these drawings:-

Fig. 1 is an elevation partly in section of the coupling.

Fig. 2 is a vertical central "exploded" section of the coupling.

Fig. 3 is a section taken on line 3-3 of Fig. 1.

Fig. 4 is a section taken on line 4-4 of Fig. 1.

Referring now to the drawings viewed in Figs. 1 and 2 the coupling illustrated comprises a casing or housing indicated generally at 5 and having a rotatable male section 6, a body section 7, and a relatively fixed female section 8, the male and the latter section 6 and 7 each being formed with terminal nut portion 9 and internal threaded bores 10 for attachment to one of the pipes 11 and 12 to be coupled.

The male section 6 is curved at the inner end 6a, terminating in a straight stem 13 formed at the outer end with a pair of closely spaced parallel collars 14 and 15 forming therebetween an annular groove 16.

The hexagonal body section 7 has a stepped axial bore 17, one end 17a of which is large enough for insertion of the above-mentioned collars 14 and 15, and the straight stem 13 of the male section 8, the collar 15 seating against the angular shoulder 17b defining the end section 17a of the bore 17. The coaxial stem 13 of the male section 8 projects into the bore of the female section 8 indicated generally at 20 which is fitted into the other end of the bore 17 of the body section 7 as viewed in Fig. 3.

The female section 8 is also formed with a similar arcuate end 8a and a straight stem portion 22 which has a shoulder 22a at the outer end, and a stepped threaded section 23 to thread into a threaded portion 17c in the opposite end of the bore 17 of the body section 7, a lock nut 24 being provided to retain the female section 8 in the assembled position

with the body section 7 as viewed in Fig. 3. The bore 20 of the female section 8 is enlarged as at 25 in the straight stem 22 presenting an annular shoulder 25a. The straight stem 13 of the male section has a neat fit in the enlarged section 25 of the bore of the female section 8 such that the end thereof is closely spaced to the annular shoulder 25a as viewed in Fig. 3 when passed in assembly through the body section 7.

The enlarged end 25 of the bore 20 of female stem 22 has about the inner face a conical or like seating 26 for an annular sealing ring or member 27 which is arranged upon the straight stem 13 of the male section 6 to engage with the seating 26. The sealing ring or member 27 may consist of a pair of complementary washers of suitable material.

Similarly there is a conical apertured sealing face 28 in the bore 17 of body section 7 through which the male section stem 13 projects, and the above sealing ring or member 27 is seated thereon and clamped between the sealing faces 26 and 28 whereby the rotatable portion of the said stem 13 located in the stem 22 of female section 8 is completely sealed off within the body section 7 to prevent the escape of the fluid.

The body section 7 has a pair of aligning spaced apertures 28 and 29 disposed one each side of its axis and opening in the bore 17 so as to lie in assembly in radial alignment with the above-mentioned annular groove 16 between the collars 14 and 15 in the male section 6. As illustrated in Figs. 3 and 4 a pair of pins 31 are inserted through the apertures 28 and 29 to seat in the above annular groove 16 so as to restrain the male section 6 from axial movement without obstructing rotation thereof relative to the female section 8.

The pins 28-29 traverse the annular groove as the male section 6 rotates, or the body and female rotate relative to the male section.

The claims defining the invention are as follows:-

1. A swivel coupling of the type herein specified comprising an intermediate tubular body section, a relatively fixed pipe connecting section having a cylindrical stem threaded into one end of the body section, a relatively rotatable pipe connecting section having a coaxial plain cylindrical stem projecting into the other end of the body section to neatly fit the bore of the threaded cylindrical stem, an annular sealing means disposed about the plain cylindrical stem between the end of the threaded cylindrical stem and a seating in the bore of the body section, and means retaining the rotatable pipe connecting section in assembly with said body and fixed sections including at least one pin projecting through the body portion or section and an aligning peripheral annular groove in the cylindrical extension or stem of the relatively rotatable pipe connecting section, to restrain axial movement without obstructing relative rotation movement of

said rotatable section.

(26th February, 1957).

2. A swivel coupling according to claim 1 wherein the construction and arrangement or disposition of the retaining means is such that the relatively fixed pipe connecting section is removable. (26th February, 1957).

3. A swivel coupling according to any one of the preceding claims wherein the body portion or section is formed with a stepped bore having an intermediate reduced annular shoulder defining upon one side a seating for a collar upon the extension or stem of said rotatable portion or section, and upon the other side a seating for the sealing means retained between the latter seating and a seating upon the inner end of the threaded stem of the relatively fixed pipe connecting section. (26th February, 1957).

4. A swivel coupling according to claim 1, 2 or 3 wherein the peripheral groove in the plain stem of said rotatable section is defined by a pair of collars upon the latter, the inner of which collars seats against the annular shoulder in the bore of the body portion or section. (26th February, 1957).

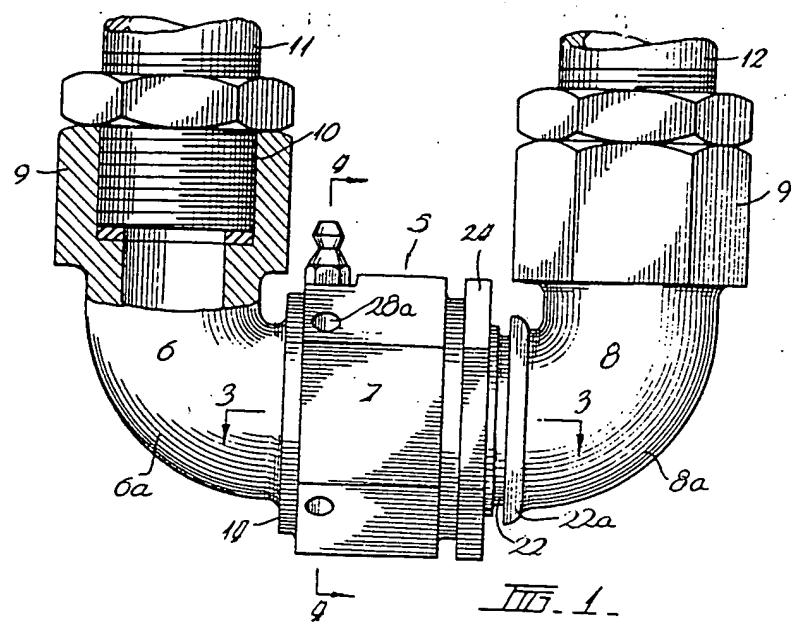
5. A swivel coupling of the type herein specified, having the construction substantially as hereinbefore described with reference to and as illustrated by the accompanying drawings. (26th February, 1957).

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References.

<u>Serial No.</u>	<u>Application No.</u>	<u>Classification.</u>
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---	4246/12	31.9.
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